

Assist

Full Automatically Alternating Pressure Relief Replacement System



USER MANUAL



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Warning

- * **Connect the Master Control unit to a 100 ~240 volt power source.**
- * **Keep the pump and mattress away from open flame.**
- * **Keep the mattress away from sharp objects.**
- * **Do not place a heating device close to the mattress system.**

Caution

- * **The System should always be used in accordance with your Institutions pressure care guidelines.**
- * **Re-positioning of the patient is always recommended when using an Alternating Pressure Air Mattress (APAM).**
- * **The Control unit can only be repaired by an authorized technician.**
- * **Do not drop the control unit.**
- * **Operation Temp: 15°C ~ 40°C R.H. : 30% ~ 75 %**

Contents

1. The Purpose of this Manual	P. 1
2. Intended Use	P. 1
3. Introduction	P. 1
4. Operation instruction	P. 2
5. Technical Data	P. 8
6. Cleaning	P. 9
7. Storage and Transportation	P. 10
8. Waste Disposal	P. 10
9. Maintenance and Trouble Shooting	P. 11
10. EMC Related Notifications	P. 12
11. Symbol Definition	P. 15

1. The Purpose of this Manual

This operation manual is mainly focused on the set up, cleaning and routine maintenance of the Assist Alternating Pressure Mattress Replacement System. We recommend to keep this manual in a safe place, to be able to use it when required.

2. Intended use

The Assist Alternating Pressure Mattress Replacement System is primarily used for the treatment and prevention of decubitus ulcers up to stage IV. The System includes the latest technology of alternating mattress therapy which enables the mattress overlay to perform accurate pressure setting to individual patients needs. The Assist Mattress Replacement System is one of the most advanced sensor technology systems, for patients with high to very high risk for pressure sores.

3. Introduction



Control Panel

User could press the button on the control panel to operate the function.

Label Area

Place for label (company logo label or operation label)

Hook Set

Remove the control unit from the box, pop-up the fixation hooks and place the unit at the foot end of the bed.

Air Outlet Plate

Connect the mattress to the control unit by plugging in the air tubes set (mattress side) to the air outlet plate (control unit side). Make sure the plug is connected properly, by hearing a 'click'.

Filter Device

The Air Filter should be cleaned and checked as often as possible at a minimum of every six months. Air Filter can be removed by pulling outwards from the back of the control unit.

Cleaning procedure for air filter

1. Remove Air filter and Replace a new Filter.
2. Use a soft brush to remove dust.



CAUTION

1. Do not use phenol based cleaning solutions.
2. Switch off the electrical supply to the pump and disconnect the power cord from the main supply before cleaning and inspection)
3. Storage and care.

Power Cord

Plug in the control unit and turn on the switch.



CAUTION

Make sure the voltage is AC 100 ~ 240 Volt.

Sensor

Connect the sensor from mattress to control unit.

4. Operation instruction

4.1 Installation

1. Unpack the system and place the pump at the foot end of the bed.
2. Remove the existing mattress and place the support surface directly onto the bed frame with the vapor permeable cover on top, ensuring that the inflation tubes are at the foot end of the bed.
3. Connect the air hoses from the mattress to the CPC connector on the side of the pump.
4. Turn on the pump unit.
5. The pump indicators will illuminate. The pump will start to inflate the air mattress.
6. Set the required pressure of the system by turning the pressure dial until the arrow on the dial is pointing at the required pressure setting.

7. Before repositioning the patient, wait 5 minutes after the low pressure LED has gone out.
Moving the patient just after the LED goes out may activate the alarm. Note : The inflation time should not exceed 25 minutes.

4.2 Control unit (pump)

Mode switch

(Auto/Manual, Alternating/Static)

Pressure adjustment (+)



LCD Display

Transfer Mode

Audio Alarm On/Off

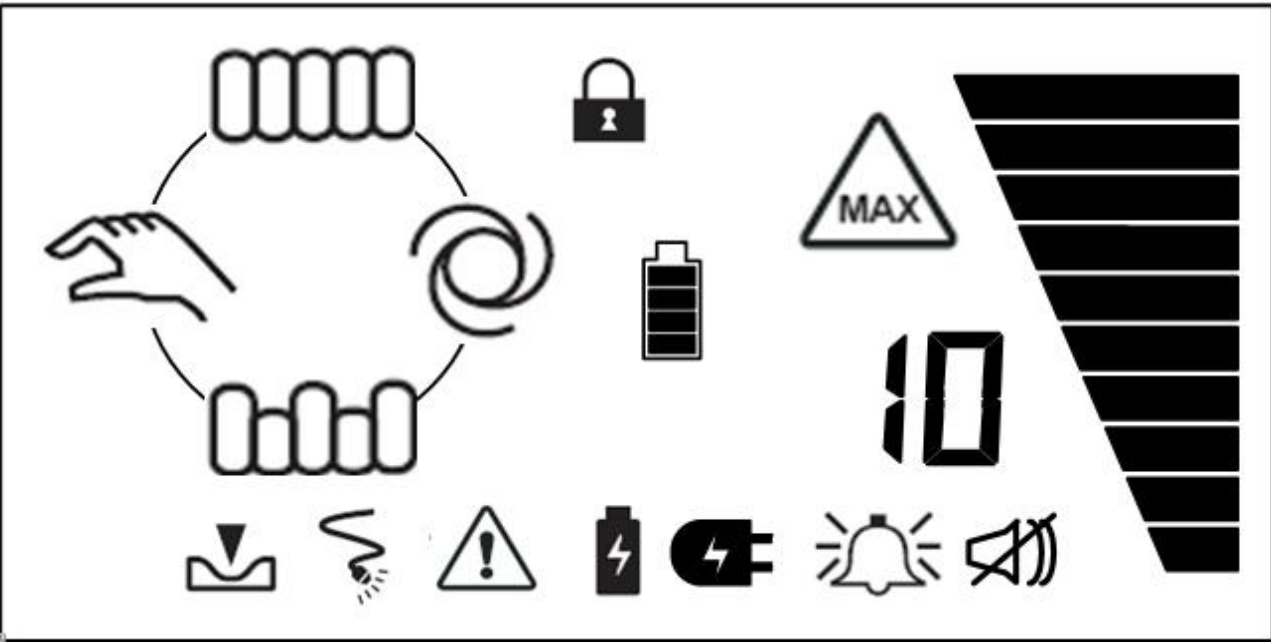















Control panel lock On/Off

Auto Firm mode

Pressure adjustment (-)

Power On/Stand-By mode

LCD Display introduction:

					
	Static Mode		Alternating Mode		Manual
	Automatic		Battery power (Transfer Mode)		AC power (Transfer Mode)
	Alarm on		Alarm off		Lock
	Max Inflate Mode		Battery Capacity indicate		
	Power failure		Out of Sensor		
	Low Pressure				

4.3 Operating instruction

4.3.1 Power On/Stand-By

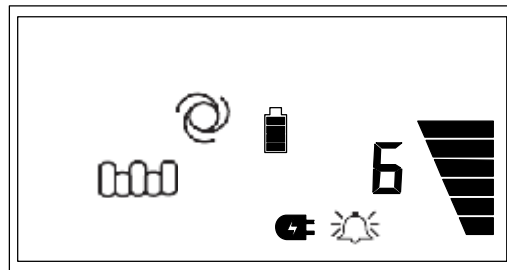
Plug the power cord to the socket and switch on the power at the power air outlet, the Orange LED will illuminate, which means Stand-by, please see below picture (Picture 4.3.1.1). Press the button Power On/Stand-By button, the LED light will turn to green, and the control unit will start to operate, please see below picture (Picture 4.3.1.2). The LCD display will display the last setting.



(Picture 4.3.1.1)



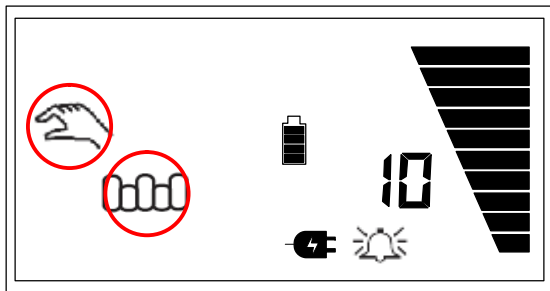
(Picture 4.3.1.2)



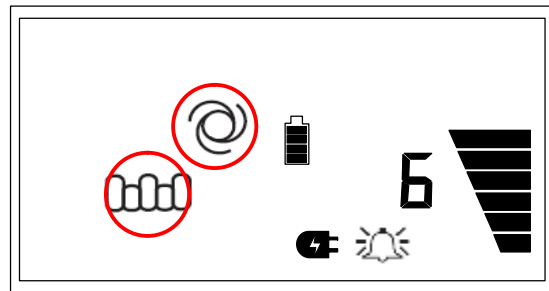
4.3.2 Mode selection

Under Normal operating, press mode button switch to Alternate mode or Static mode

Alternate mode

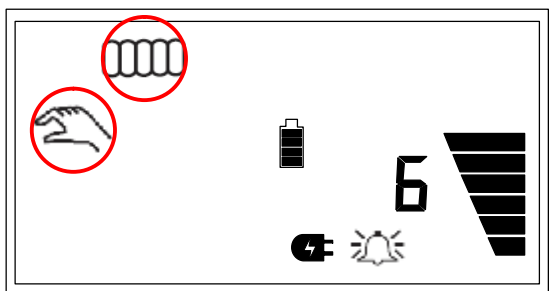


Manual Alternate Mode

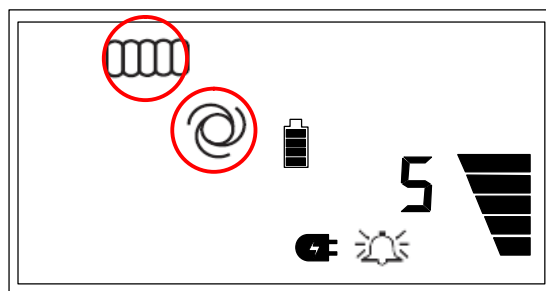


Automatic Alternate Mode

Static mode



Manual Static Mode



Automatic Static Mode

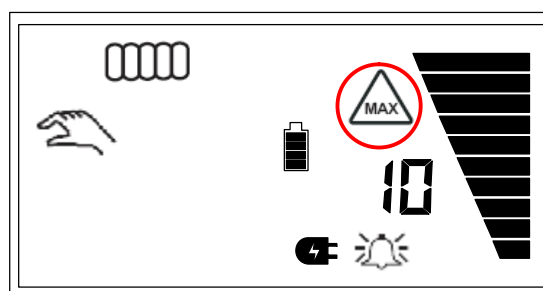
4.3.3 Maximum inflation Mode

Under normal operating, press **MAX** button to switch to Maximum inflation mode , the green LED of MAX will illuminated. (Picture 4.3.3.1)

MAX mode: Under MAX mode, the control unit will automatic switch to static mode with maximum pressure range - level 10. The setting will return back to original operating status after 30 minutes. To cancel the MAX mode, just press MAX button again, and will return to previous status.



(Picture 4.3.3.1)



4.3.4 Lock On/Off

When the pump has been activated, the pump will automatically lock on after 1 minute without operation, and press the lock On/Off button for 3 seconds to unlock. All the buttons will be locked under Lock function except "MAX" function. (Picture 4.3.4.1)



(Picture 4.3.4.1)

4.3.5 Transport function

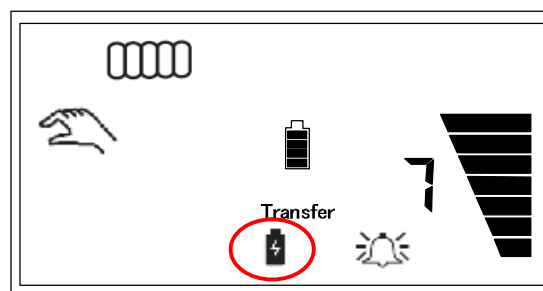
"Transfer" function is unable to switch the AC power to battery power, and the user can use this function to do transferring. (Picture 4.3.5.1)

When pressing the transfer mode, the LED light of the transfer mode will flash, and will detect the power status with audio alarm. After 2 minutes of detecting,

- (A) If the AC power is already unplugged, the LED light will be illuminated permanently and the audio alarm will be automatically turned off. And the pump will switch to Static mode. The audio alarm will be activated every 15 minutes for reminder (3 beeps per second), the alarm will be activated in 15 minutes, 30 minutes, and 45 minutes. In 55 minutes, the audio alarm will continue to beep until the AC power is plugged in.
- (B) If the AC power is still plugged after 2 minutes of detecting, the pump will automatically returns to previous setting.



(Picture 4.3.5.1)

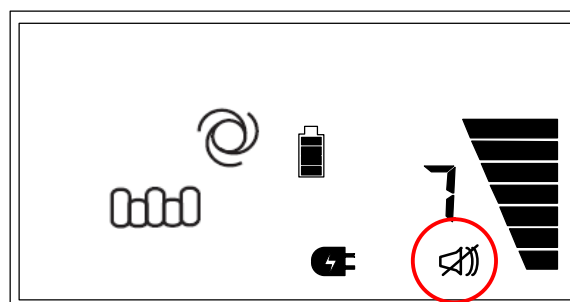


4.3.6 Alarm On/Off

Press Alarm on/off to switch on/off the audio alarm. (Picture 4.3.6.1)

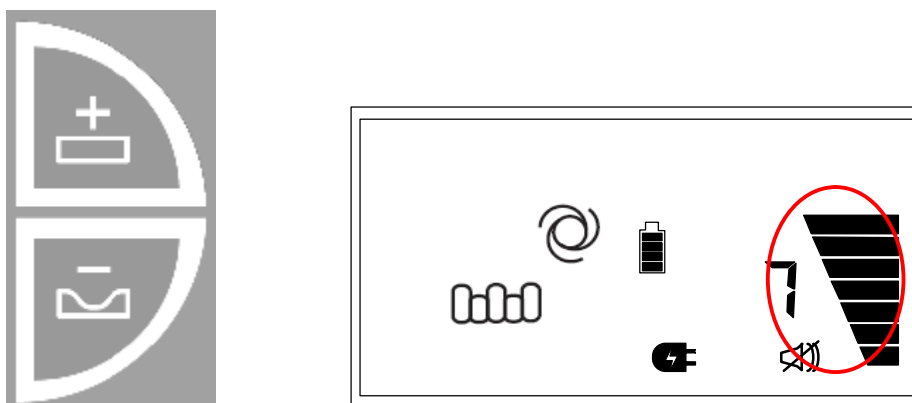


(Picture 4.3.6.1)



4.3.7 Pressure setting

Adjust the pressure using the (+/-) button, the level of pressure will be displayed on the LCD panel. (picture 4.3.7.1)

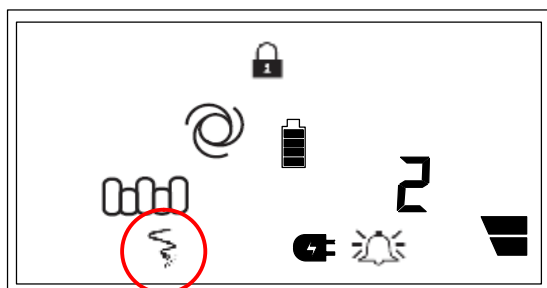


(Picture 4.3.7.1)

4.3.8 Automatic Mode

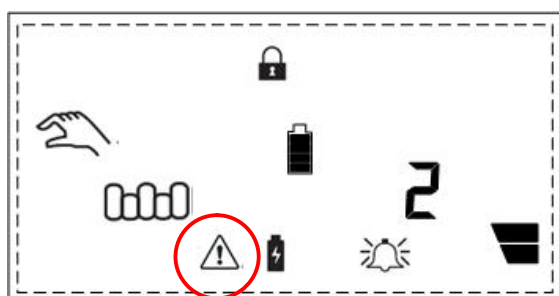
Plug in the connector of sensor pad to the control unit. The sensor will automatic detect the weight of the user and select the correspondence pressure range automatically.

If the Sensor pad is not plugged in properly, when switched to the Automatic mode, the alarm will be activated. And the sign of "out of sensor" will be flashing on the LCD display until the sensor has been plugged in properly. The sensor will detect every hour under Automatic mode the pressure of the client.



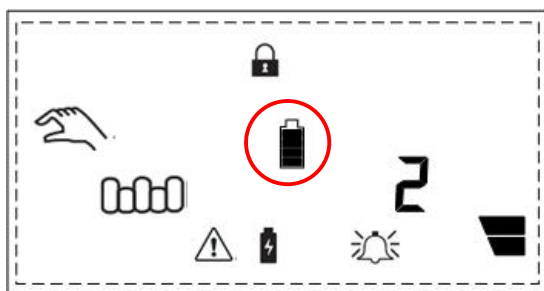
4.3.9 Power Failure

When there is a AC power failure, the power failure alarm will be activated. And the Power failure sign will be displayed on the LCD display, and the power will switch to the battery used sign.



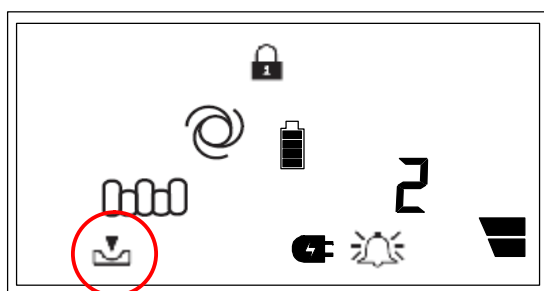
4.3.10 Battery Capacity

The LCD display will show the capacity of battery. And the battery will be charged when connected to AC power. When the battery capacity is full, the power of battery is minimum 1 hour.



4.3.11 Low Pressure Alarm

During operation period, if the pressure in the mattress is insufficient for over 30 minutes, the audio alarm will be activated, and the Low pressure sign will be illuminated on the LCD display.



5. Technical Data

Master Control Unit

Model name	Assist
Model No.	M19
Part No.	FC-PHE0003
Size (cm)	27.5(L) x 13.3(W) x 32.6(H)
Weight (kg)	6
Cycle Time (min)	8.5 min
Min/Max Pressure	17 ~ 30 mmHg +/- 5 mmHg
Max Flow-rate	7 L/min
Rated Voltage	AC 100~240 volt
Max Current	0.2 A
Fuse Rating	T1AH 250V
Rated Frequency	50/60 Hz
Protection Type	Class II, Type BF Not AP or APG Type
Mode of Operation	Continuous



Mattress Replacement

Mattress type	20 cm Replacement + sensor pad
Model No.	FM-PHE0006
Size (mm)	200cm(L) x 90cm(W) x 20cm(H)
Weight (kg)	10.6 kg
Cell Material	PU coated Nylon
Cover Type	Full Cover with zipper
Cover Material	2-way stretch PU coated Nylon, Blue color
Base Material	PVC Mesh, Black color
Number of Cells	20
Maximum Weight Capacity	230 kg

6. Cleaning

The mattress should be cleaned on the bed weekly using a damp soft cloth and mild detergent. If top sheet (Top cover) or base (Bottom cover) becomes very dirty, put on clean gloves, plastic clothing and eye protection before removing top sheet or base and disposing according to standard hospital procedures for contaminated waste. Replace with clean covers.

Covers can be washed and thermally disinfected in a washing machine following below procedure:
(Never use phenol based cleaning solutions)

Industrial	Break washes	Cold	10 minutes
	Main washes	60° C	6 minutes
	Main washes	70° C	10 minutes
	Extraction		2 minutes
	3 Cold Rinses		
Domestic	Extraction		5 minutes
	Pre-wash	Cold	
	Main Wash	70° C	10 minutes
	Extraction		2 minutes
	Cold Rinses		
	Extraction		5 minutes

Article I. Mattress Cells can be wiped over with a solution of sodium hypochlorite 1000ppm or any other non-phenolic germicidal solution.

Master Control Unit

SWITCH OFF THE ELECTRICAL SUPPLY TO THE PUMP AND DISCONNECT THE POWER CORD FROM THE MAIN SUPPLY BEFORE CLEANING AND INSPECTION

The pump unit should also be cleaned weekly using a damp soft cloth and mild detergent.

The pump casing is manufactured from ABS plastic and if the case is soiled the pump can be wiped down with a sodium hypochlorite solution to dilution of 1000ppm or any EPA- approved hospital grade disinfectant. (Do not use phenol based cleaning solution)

7. Storage and Transportation

Master Control Unit

Storage and transportation conditions

Temperature limitations: 5°C ~ 60°C

Relative humidity: 30% ~ 75%

- I Check the power cord and plug for scratches or extreme damage.
- I Plug in the unit and verify air flows from the units hose connection ports
- I Place the unit in plastic bag for storage.

Overlay Mattress

- I Check the air manifold for nuds or damage. Replace if necessary.
- I Twist the CPR plug at the head of the mattress and disconnect the air feed tubes. All the air will be expelled. Starting at the head end, the mattress can now be rolled. Use the base mounted straps for rolling up the mattress.
- I Place the mattress in plastic bag for storage.

It is recommended the following guidelines are used whenever this system is being stored or transported to another location:

Temperature limitations: 15° C ~ 40° C

Relative Humidity: 30% ~ 75%

8. Waste Disposal

This Product has been supplied from an environmentally aware manufacturer that complies with the WEEE.

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according the legislation. Please be environmentally responsible and recycle this product through your recycling facility at its end of life.



9. Maintenance & Troubleshooting

No daily maintenance is required. It is intended that this equipment should only be serviced by an qualified, authorized technical personnel. In case of minor troubleshooting please refer to the following troubleshooting schedule:

Symptom	Inspection Procedure	Possible Solution
Pump not operating	<ol style="list-style-type: none">1. Power terminal may not be secured properly or incorrect voltage connected.2. PC board malfunctions.3. Fuses burn down	<ol style="list-style-type: none">1. Check for power terminal or main voltage2. Replace PC board3. Replace fuse
Pump functioning but no air out put	<ol style="list-style-type: none">1. Bello diaphragm in compressor could be worn out.2. Internal air tubing may become loose3. Coil inside the compressor unit worn out	<ol style="list-style-type: none">1. Replace diaphragm2. Secure tubing inside the pump3. Replace coil
No Alternation or LED indicator does not light up immediately.	<ol style="list-style-type: none">1. Possible loose wire connection for motor timer and micro switch.2. Time motor worn out or broke down.3. Micro switch broke down4. LED indicator broke down	<ol style="list-style-type: none">1. Secure wire connections.2. Replace motor timer3. Replace micro switch4. Replace circuit board
Low Pressure light does not turn off after mattress is fully inflated	<ol style="list-style-type: none">1. Check for functionality of pressure control module.2. Possible PC board malfunctions.	<ol style="list-style-type: none">1. Replace pressure control module2. Replace PC board
No audio alert during power cut/power outage.	<ol style="list-style-type: none">1. Audio alarm switch may be turned off.2. Audio alarm switch malfunction	<ol style="list-style-type: none">1. Turn the switch to ON position.2. Replace alarm circuit board

10. EMC related notifications


Guidance and manufacturer's declaration – electromagnetic emissions		
The Equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Equipment should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The Equipment uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The Equipment is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Recommended separation distances between portable and mobile RF communications equipment and the Equipment			
The Equipment is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Equipment can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Equipment as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Guidance and manufacturer's declaration – electromagnetic immunity			
The Equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Equipment should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
interruptions and voltage variations on power supply input lines IEC 61000-4-11	$<5\%$ UT ($>95\%$ dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles $<5\%$ UT ($>95\%$ dip in UT) for 5 sec	$<5\%$ UT ($>95\%$ dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles $<5\%$ UT ($>95\%$ dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Equipment] requires continued operation during power mains interruptions, it is recommended that the Equipment be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE UT is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity

The Equipment is intended for use in the electromagnetic environment specified below. The customer or the user of the Equipment should assure that it is used in such an environment.









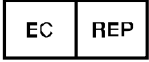




Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC 61000-4-6</p> <p>Radiated RF IEC 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2,5 GHz</p>	<p>3 Vrms</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Equipment, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P} \text{ 80 MHz to 800 MHz}$ $d = 2,3 \sqrt{P} \text{ 800 MHz to 2,5 GHz}$ <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, B should be less than the compliance level in each frequency range. B</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Equipment is used exceeds the applicable RF compliance level above, the Equipment should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Equipment.
- b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

11. Symbol Definition

	Refer to included Documents
	Class II Equipment, Double Insulated
	CE Mark
	Waste Disposal
	Type BF Applied Part
	Alternating Current
	Manufacture
	Reference Number
	Authorized Representative
	Caution
	Date of Manufacture
	Batch Code
	Serial Number



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